described in more detail below. A ram 21 follows the reciprocation of the piston 20 in the usual manner due to successive reversing pressures in an air cushion within the spindle 18 between the piston and the ram. The reciprocation of the ram 21 causes the ram to repeatedly impact an anvil 22 which repeatedly impacts a tool or bit(not shown). The tool or bit is releasably secured to the rotary hammer by a tool holder of conventional design, such as and SDS-Plus type tool holder 16, which enables the tool or bit to reciprocate within the tool holder to transfer the forward impact of the anvil 22 to a surface to be worked, such as a concrete block. The tool holder 16 also transmits rotary drive from the spindle 18 to the tool or bit secured within the tool holder.--

--[0038] The hammer drive arrangement includes a hammer drive sleeve 34 which is rotatably mounted on the intermediate 24 and which has a wobble plate track 36 formed around the sleeve at an angle to the axis of the intermediate shaft. A wobble plate ring 38, having an extending pin 40, is mounted for rotation around the wobble plate track 36 by way of ball bearings 39 in a conventional manner. The end of the wobble pin 40, remote from the wobble plate ring 38, is mounted through an aperture in a trunnion 42 which is pivotally mounted to the rear end of the hollow piston 20 by way of two arms 44 having aligned apertures formed therethrough. Thus, when the hammer drive sleeve 34 is rotatably driven about the intermediate shaft 24, a wobble plate drive (which is formed by the wobble plate track 36, the wobble plate ring 38, the ball bearings 39, the wobble pin 40, the trunnion 42 and the arms 44) reciprocally drives the hollow piston 20 in a conventional manner. The hammer drive sleeve 34 has a set of driven splines 48 formed on a forward end of the sleeve. The driven splines 48 are selectively engageable with the driving gear 50 by way of the mode change mechanism described below. When the intermediate shaft 24 is rotatably driven by the motor pinion, and the mode change mechanism engages the driving splines 48 of the hammer drive sleeve 34, (1)

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the driving gear 50 rotatably drives the hammer drive sleeve, (2) the piston 20 is reciprocally driven by the wobble plate drive, and (3) the tool or bit mounted in the tool holder 16 is repeatedly impacted by the anvil 22 by way of the action of the ram 21.--

--**[0039]** The spindle drive member includes a spindle drive sleeve 56 which is mounted for rotation about the intermediate shaft 24. The spindle sleeve drive 56 includes a set of driving teeth 60 at the forward end thereof which are permanently in engagement with the teeth of a spindle drive gear 62. The spindle drive gear 62 is mounted non-rotatably on the spindle 18 by way of a drive ring 64 which has a set of teeth formed on the internal circumferential surface thereof which are permanently engaged with a set of drive teeth 66 formed on the outer cylindrical surface of the spindle 18. Thus, when the spindle drive sleeve 56 is rotatably driven, the spindle 18 is rotatably driven, and this rotary drive is transferred to the tool or bit by way of the tool holder 16. The drive sleeve 56 has a driven gear 58 located at a rearward end of the drive sleeve which can be selectively driven by the intermediate shaft driving gear 50 by way of the mode change mechanism.--

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--**[0047]** As the internal teeth 54 are engaged with the hammer driven splines 48, rotation of the intermediate shaft 24 is transmitted to the hammer drive sleeve 34 which rotates with the intermediate shaft. Thus, rotary drive from the motor is translated into a reciprocating drive of the hollow piston 20 by way of the driving gear 50 of the intermediate shaft, the mode change sleeve 52, the hammer driven splines 48 on the hammer drive sleeve 34 and the wobble plate mechanism, whereby hammering action occurs. The engagement of the internal teeth 54 of the mode change sleeve 52 with the driving gear 50 of the intermediate shaft 24 and the driven gear 58 of the spindle drive sleeve 56 transmits rotary drive from the intermediate shaft to the spindle drive sleeve 52.

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This rotary drive is then transmitted to the spindle 18 by way of the driving teeth 60 on the spindle drive sleeve 56, the spindle drive gear 62 and the spindle drive ring 64. Accordingly, the rotary hammer operates in the rotary hammer mode. Note that the rotary hammer can be moved into the rotary hammer mode by rotating the mode change knob 8 either counter-clockwise from the rotary drive only position or clockwise from the hammer only mode position.--

--**[0054]** A second embodiment of a rotary hammer having a mode change mechanism according to the present invention is shown in Figs. 3, 4a and 4b. The second embodiment is similar to the first embodiment of the rotary hammer, with like parts identified by like numerals, the difference being that the spindle drive member is a spindle drive pinion 56'. As shown in Figs. 3, 4a and 4b, the front end of a motor drives the intermediate shaft 24 of the rotary hammer by way of a motor pinion 23 and the drive gear 32 of the intermediate shaft. In this way, the intermediate shaft 24 is always driven in rotation when the motor is switched on. The spindle drive pinion 56' has a rearward axial projection 70 which is rotatably mounted within a co-operating recess 72 within the front part of the intermediate shaft 24 by way of a needle bearing 74. Thus, the spindle drive pinion 56' can rotate relative to the intermediate shaft 24. The forward end of the spindle drive pinion 56' is rotatably mounted in a bearing 28 mounted in the rotary hammer housing. In the same way described above, rotary drive is transmitted from the intermediate shaft 24 to the spindle drive pinion 56' by the mode change sleeve 52 to rotatably drive the spindle 18 by way of the spindle drive gear 62.--